Section of Odontology

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Principles Concerned in Tooth-Cavity Preparation

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FOR the purpose of this article a cavity is described as a break in the continuity of the surface of the crown of a tooth, creating an abnormal area or space, due to the loss of hard tissue, usually caused by caries, and occasionally by trauma, and provided that such loss of continuity does not involve the major portion of the external circumference of the tooth, and in any case leaves sufficient of the tooth crown into which retention of a filling may be established.

A filling is defined as the material used to fill a cavity in a tooth under the above conditions: (1) to prevent further loss of tooth structure, and (2) to restore its lost natural contour and anatomical relation to contiguous teeth, and the function of the tooth.

Filling materials at our disposal may be divided into two groups: (*a*) Plastic: (i) adhesive, and (ii) non-adhesive; (*b*) non-plastic.

Fillings may be retained in a cavity in several ways, e.g.: (1) By the inherent adhesiveness of the material used; (2) by keys or wedges formed in the tooth to retain the mass in position when solid; (3) by a combination of both.

Further, in considering the principles of cavity preparation, I intend to restrict my remarks to cavities occurring in teeth in which the pulp is still healthy and vital, as they are the more difficult to deal with. The retention of fillings in pulpless teeth is a comparatively simple matter since by the loss of the pulp the pulp chamber and the root-canal or canals are readily available to afford retention.

In describing the walls of the cavity I shall name them in relation to the surfaces of each tooth, as adopted by the Fédération Dentaire Internationale, namely: Facial (which will include labial and buccal), lingual (which will include palatal), distal, mesial, and occlusal, with the addition of a pulpal wall.

I shall also use the term "floor" meaning that portion of the cavity which will form the foundation of the filling and the angles described will be those formed by the junction of these various walls.

By the term "angle" is meant that part within the cavity formed by the junction of two or more walls and named after the walls concerned.

In the case of the anterior teeth, the occlusal surface is represented by a more or less thin line formed by the junction of the facial and lingual surfaces and spoken of as the incisive edge.

In the finished cavity it is essential to lay down:—

(1) That the retaining device for a filling must be made in sound dentine.

(2) That the remaining enamel must be supported by sound dentine.

(3) That the edges of the finished cavity must not come into contact with the surfaces of contiguous teeth or the edges of a contiguous filling, and must be free from the contact point.

(4) That the filling material must form the contact point of the contiguous tooth, or, in the case of two contiguous fillings, the contact point should be made by each other.

(5) That the edges of the cavity should be accessible for cleansing—either naturally or by other means—or, in the case of the cervical margin, protected by soft tissue.

Before proceeding to the classification of the cavities and the principles involved in each, it may be interesting and instructive to present the views and illustrations of earlier writers. From my limited reading I am not able to suggest how far back in the ages cavities have been artificially prepared, either as a means of repairing the ravages of caries or for decorative purposes. Dall describes South American Indians as decorating their anterior teeth by inlaying them with coloured stones some thousand years B.C.

In Harris's "Art of Dental Surgery," 1839, it is stated that plugging was performed in the first century. The term "plombage" used to this day by the French to denote a filling dates from the use of lead.

Since the early materials used for fillings were non-adhesive and were prepared in the form of foil from lead, tin, and later, gold, they depended for their retention on being packed or wedged tightly into a cavity from which caries had been removed. The retaining walls of the cavity had, therefore, to be strong enough to withstand the requisite strain of filling, and the inside of the cavity had to be larger than the external orifice in order to retain the mass.

Mrs. Lindsay, to whom I appealed for information on this point, says that "Early authors on cavity preparation simply say 'Cut out the decay and fill.'"

Fauchard, 1728, gives no description as to how the cavity is prepared. Bourdet, 1757, describes the instruments which should be used in order that the filling may be adapted to all corners of the cavity, thus suggesting a wedge formation. Berdmore, 1770, and Rae, 1782, speak of a cavity as a hole. Fox, 1814, makes no mention of the shape of the cavity, but states that when a filling is inserted in the sides or between the teeth pressure of food is liable to displace it. Thomas Bell, London, 1835, states that the cavity to be filled should be narrow in proportion to its depth and if practicable should be made larger within than at its external orifice. Chapin A. Harris, 1839, describes the cavity as a very little larger internally than externally—the principle again incorporated in the edition of 1845. In the 1850 edition he states that the cavity must be so shaped that when properly filled there is no liability of the filling coming out. Robert Arthur, 1857, describes the cavity as a little larger than the orifice. He was the first to introduce starting-points. John Tomes, 1859, regards the cylindrical hole as the most suitable for the reception of a plug, and suggests that overhanging edges must be cut away sufficiently, if not to produce rectilinear walls, to reduce the angles to moderately curved surfaces. "The strength of the walls of the cavity is a very important subject." He suggests starting-points if cohesive gold is to be used.

S. J. A. Salter, 1874, suggests that tooth-stopping is now so mechanical that it does not come within the scope of dental surgery.

Coleman, 1881, speaks of filing and polishing to remove cavities, as do earlier writers, and seems to be the first to describe wedges or the keying process and the use of retaining pits or grooves. He made use of hand drills. "The American System of Dentistry" (edited by Wilbur Leitch, vol. ii, 1887), suggests that where cohesive gold only is used, a pit should be made, care being taken as to the proximity of the pulp and suggests that the cavity be larger inside than out, the undercutting of the walls and use of pits and grooves. He also describes the manner of wedging in an

interstitial cavity (incisor). Tomes' "Dental Surgery," 3rd edition, 1887, describes the single wedge form for occlusal cavities and the use of pits in interstitial incisor cavities. Smale and Colyer, "Diseases and Injuries of the Teeth," 1893, describe and illustrate the wedge formation in incisor teeth, the double wedge for mesio-occlusal cavities and retention by the use of pits and grooves. C. A. Harris, "Dental Art," 1839, makes the first reference to the introduction of amalgam under the name of "royal mineral succedanium" the same as advertised in 1834, and by the introduction of cohesive gold in 1885, material was available to make possible the restoration of all forms of lost contour and demanded a variety of differently shaped cavities. The technique of the preparation of such cavities was rendered much less difficult by the introduction of the dental engine by Morrison, thus allowing of the use of burs instead of hand drills, further accelerated by improvement in burs and handpieces to retain the same.

My training was based on the principle that the cavity should be larger inside than out (1891-92) and suggestive of wedges, but mainly depending, in the case of gold, on retaining pits and grooves. The publication of a book, "Methods of Filling Teeth," by Ottolengui, stimulated me and first interested me in retention methods. My failures were particularly helpful and won my appreciation of the mortise method. On examining a filling which I removed from an extracted tooth into which I had inserted it many years previously, I was struck by its wedge-shaped formation and convinced that properly designed wedges were the most efficient, and pits and grooves rarely necessary.

Another work which distinctly impressed me was that of Kirk—"Operative Dentistry," 1912—the illustrations in which, under the heading of "Technique and cavity preparation," are of such beauty as to be understood even without reading the text. He described and illustrated the common and complex mortises used by mechanics, and their adaptation in cavity preparation, together with the triangular form and wedging in interstitial incisor cavities. I was gratified to find that without any previous knowledge of his work, I had developed my cavities on similar lines, as a result of experience.

Black (Operative Dentistry, 1908) classifies cavities mainly in reference to the positions in which they occur and the manner in which they extend, as follows :—

Class 1.—Cavities beginning in pits and fissures in any parts of teeth in which these occur.

Class 2.—Cavities beginning in the proximal surfaces of bicuspids and molars.

Class 3.—Cavities beginning in the proximal surfaces of the incisors and cuspids which do not require the removal and restoration of the incisal angle.

Class 4.—Cavities beginning in the proximal surfaces of the incisors which require the removal and restoration of the incisal angle.

Class 5.—Cavities beginning in the gingival third—not pit or fissure cavities—of the labial, buccal or lingual surfaces of teeth.

Yet notwithstanding the apparent thoroughness of Black's classification I found on my visit to America that many of the schools were not satisfied with it and were adding to it by further division.

I prefer to adopt a more simple classification, incorporating the principles of retention rather than that based on the position in which the cavities occur, and for years have practised and taught the principles of cavity-preparation based on the following classification when the filling is composed of one single material :—

Class 1.—Composed of a single wedge, notwithstanding their ramifications. They are surrounded by dental tissue and confined to one plane of the tooth, the pulpal wall forming the floor, e.g. occlusal cavities, fissures, buccal and lingual fissures or pits, the mesial or distal surface of a tooth if a tooth is missing.

Class 2.—Composed of two wedges involving two planes with the floor of the cavity at the cervical margin, mainly formed in premolars, molars and canines. If in incisor teeth the floor is formed by the facial wall with a key in the lingual wall.

Class 3.—Composed of more than two wedges and confined to interstitial cavities in incisor teeth and canines.

By the above three classes and their combination practically all types of restoration can be undertaken. This classification has the merit, to my mind, of simplifying cavity preparation, as it is based on the internal formation, irrespective of position.

Where the inlay method of restoration is adopted it is necessary to have a different classification and a different technique of preparation and will be dealt with separately.

Before I explain my method of preparation I would like to make a brief note on the instruments used.

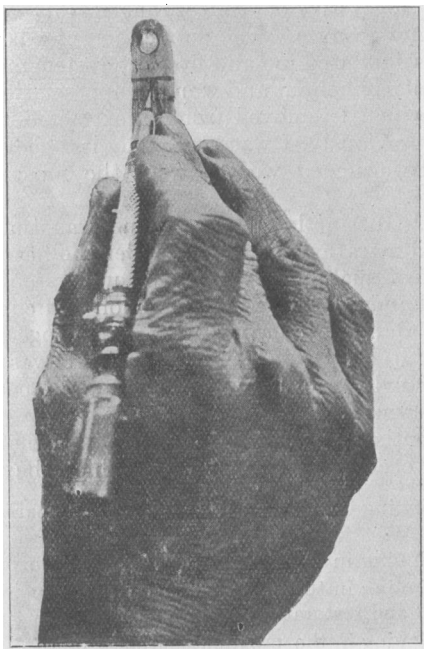

FIG. 1.

First and foremost, I prefer straight instruments, but if curved ones are used the working point should be near the centre of the long axis of the handle. It is better to use a few instruments and get to know them thoroughly, than to make an accumulation of all forms.

Chisels should be sharp and maintained in their sharpness, and discarded if sharpening does not make them efficient.

Chisel excavators—rarely used—must also be kept sharp.

Spoon excavators—straight spoon in particular, and two types of curved—must be kept constantly sharp by honing.

Stones are commonly used, particularly in these days when there has been such improvement in their manufacture.

Use of engine: I feel that the method of gripping the handpiece is of paramount importance. I grip them in two ways: (1) The pen-grip with the middle-finger rest (fig. 1); (2) the first-finger-and-thumb grip, with the thumb rest (fig. 2).

For the right angle and obtuse angle I use, mainly, the pen-grip with the middle-finger rest, and less commonly, the finger-and-thumb grip with the thumb rest.

Burs.—Three types only are needed: (1) Fissure: Their use is obvious, namely, to open up cavities and to form the sides of the keys or wedges, particularly in Class 2 cavities; (2) Inverted cone: Its furthest end used to flatten the floors and its sides to slightly undermine the walls in Class 1 cavities only; (3) Rose-head: can be used in all directions, very rarely as a drill—occasionally for cutting from inside outwards and removing overhanging walls or edges. The sides provide the fullest and most efficient portion, that is, at its greatest diameter at right angles to its shaft, and used almost in the manner of scribing, keeping the most perfect control as to its cutting and using from the lightest to whatever force is required by lateral pressure.

Separation.—Where interstitial cavities occur the teeth should be separated artificially, provided such separation has not already occurred, owing to the

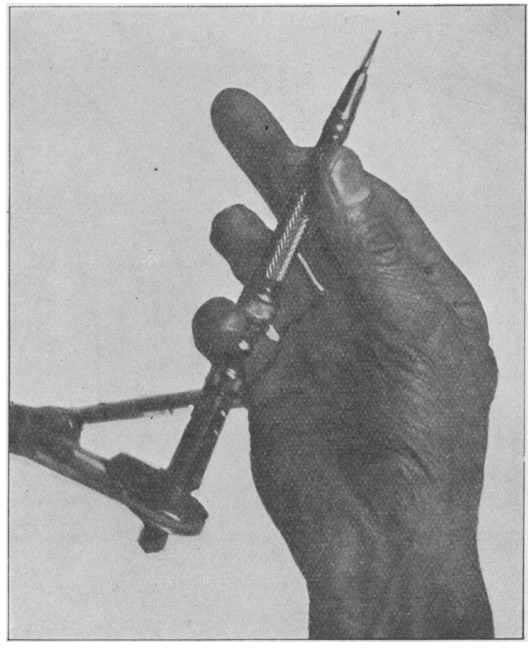

FIG. 2.

irritation and thickening of the interdental septum. The amount of separation needed is only such as to allow of the thickness of a Moore's disc or strip between the finished contact-point of the filling and that of the contiguous tooth or filling, thus allowing the tooth to come into normal position with the minimum of movement. Over-separation tends to damage the tissues and prevent their return to normal position. Occasionally if the tooth is crowded, separation is not necessary.

Survey.—Before opening up a cavity or breaking-down the walls, one should carefully survey the plane or planes of the tooth involved and determine the amount of damage which has taken place and form a fairly definite plan as to how it is intended that the cavity should be developed. The shape, having been determined, the obviously unsupported and damaged enamel should be removed

by bur or cleavage by chisel, sufficient to allow the inside extent of the cavity to be estimated. The walls should not be cut away too generously, even if at first they do not appear ideally strong. With either bur, stone, or chisel, the enamel should be removed so as to leave the wall in the line of the prisms. Easy access having been gained by the use either of the spoon-excavator or of burs, the obviously damaged internal tissue is easily seen and removed.

After removal of the defective tissue the walls may need further trimming, as the decay may have spread more extensively under one wall than another. Even then one should not be over-generous in its destruction at this stage. Again, enamel should be cleaved in such a way as to leave the edges of the cavity in long curves rather than in short ones, even if a fair amount of perfectly sound tissue has to be sacrificed in order to gain such shaping, retaining in all cases, within reason, as much of the facial surface as will serve to hide the filling, should it not assimilate in colour to that of the tooth itself. The end-result of this will give a more or less saucer-shaped cavity.

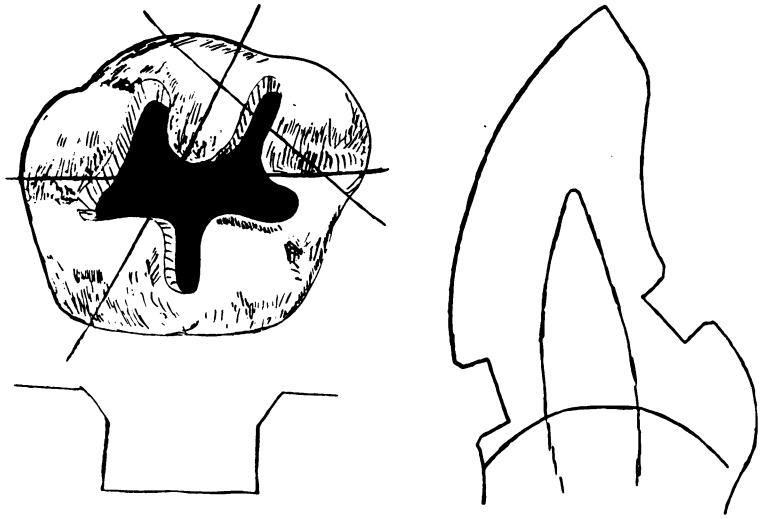

FIG. 3.

Class 1 (fig. 3).—If this occurs in fissures or extends into fissures, the fissure bur is used and carried along to the end of the infected fissure or fissures in each direction. The enamel is then broken-down with the chisel, and, if necessary, the spaces in the fissures are enlarged to allow for the filling. This is done till the walls are practically straight and the rest of the caries is excavated or drilled out. I then choose as large an inverted cone as I feel will pass along each of the fissures, and, with the same cut, shape the cavity, removing the secondary enamel decay, and/or carious dentine. The size of the inverted cone will vary with the size of the fissure. For the central portion I use as large an inverted cone as the cavity will allow and run it round the walls, slightly undercutting them, at the same time running it into the cavity so as to flatten the floor. The occlusal walls are then bevelled if gold is to be used. The outline of the cavity will vary in accordance with the direction of the fissure and the size of the main central cavity.

For a cervical cavity on the facial aspect of incisors I choose a rose-head bur which I estimate will cut out the full width of the decayed area and leave a sound enamel edge. This will produce a definite saucer-shaped cavity, either perfectly round or crescent-shaped, according to its ramification. I then take an inverted cone, slightly less in size, driving it into the tooth to flatten the floor and drawing it round the walls to slightly undercut them, thus completing the operation in two movements.

Class 2 (fig. 4).—When dealing with an interstitial cavity where the break into the occlusal surface is not definite—that is, when the edges almost touch the contiguous tooth—I take a No. ½ (American gauge)[1] rose-head and break through its extreme edge and then pass a No. ½ or a No. 1 fissure bur into it towards the centre of the tooth, holding the fissure bur obliquely, that is, with its tip always furthest away from the pulp. I then retain the same fissure bur, cutting towards the lingual aspect as far as I feel the damage to the tooth extends, then coming back to

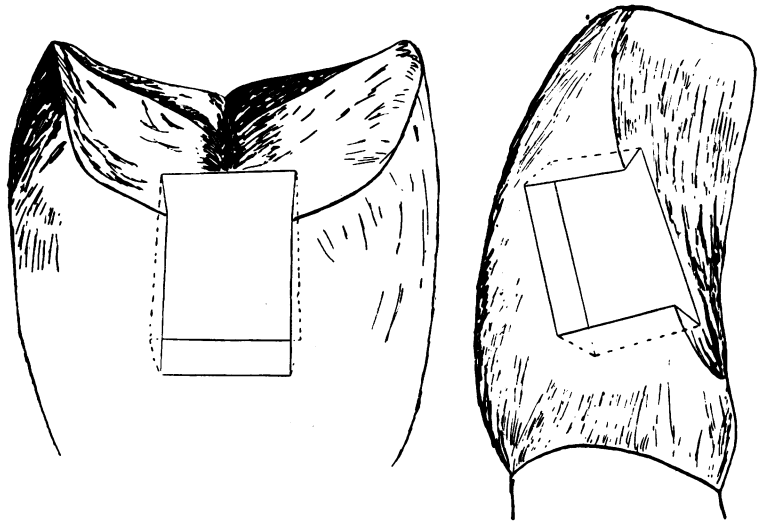

FIG. 4.

the centre and making a similar cut towards the facial side, thus giving two cuts in the form of a T, one antero-posteriorly and the other linguo-facially. I then crash in the overhanging enamel, but in such a way as to leave the broadest portion towards the pulp, and then interstitially chisel down the lingual and facial walls until they are extended into a safe area. This thoroughly exposes the cavity. The damaged tissue is removed by chisel or spoon-excavator, or even by bur, and the cervical margin or floor is chiselled or stoned down until all damaged enamel is removed. A fissure-bur with a square end is then introduced and run down from the occlusal surface; the bur is held in such a way that its deeper portion will be definitely nearer the lingual wall at its base, and it is worked straight across and in contact with the floor until the facial wall is reached. In this case the end of the bur should be nearer the facial wall than that portion which is cutting the occlusal surface. The cavity is then examined and shaped in this way until the cervical floor is flat and dips slightly inwards, the pulpal wall is flat and the lingual and facial

1 Sizes of burs : ½ = 0·6 mm. ; 1 = 0·8 mm. ; 2 = 1 mm.

walls also slope slightly inwards. The angles are finally accentuated by a No. ½ fissure or rose-head bur. The lingual and facial walls are then trimmed to follow the contour and cut parallel to the enamel prisms. The cervical margin is bevelled, as are also the occlusal edges if for gold, and the joint of filling and tooth is pleasingly curved.

Occasionally there may be a Class 2 cavity in the incisor region. In this case the floor of the cavity is formed by the facial wall and the keying is shown on the lingual wall. Such cavities, of course, have to be prepared and filled by reflection. They have the advantage that frequently where the lingual wall has been very badly damaged, there is less loss of sound tissue in forming the key and the facial wall will hide the filling material. If, for example, one finds, as one frequently does in this class of cavity, the occlusal fissures are involved, then one extends and shapes the fissures just as one does the simple Class 1 cavity. Such fillings then become a combination of the two types (2 and 1).

Class 3.—In this class of cavity the extent of the damage should be carefully noted and a definite plan devised before any of the tissues are broken down. When the ultimate shape has been visualized the very obviously unsupported enamel is removed by chisel, the direction of the edge of the chisel being altered in accordance with the surface being cut so as to leave the enamel prisms in their entire length and not at first cut away too generously. The internal damage is then more fully realized and the obviously damaged tissue removed by a spoon excavator or burs. Following this it may be necessary to trim the walls further if the enamel has become undermined by caries. The curve given to the wall, as these cavities occur mostly in incisors and are more readily visible, should be long and gradual, even if one extends the cavity by sacrificing some sound tissue. In this way one creates an optical illusion by lengthening the curve, thus making the filling look narrower or less conspicuous, though, in fact, the cavity is larger. The exposed walls should be shown in one curve and not waved, ideally a small segment of a large circle rather than a large segment of a small circle. This particularly applies when the filling material used does not assimilate the colour of the tooth. The cavity at this stage will be saucer-shaped (fig. 5*a*). I then, with either a No. 2 or No. 1 rose-head, according to the size of the cavity, and using it as a graver, outline the internal shaping, cutting into the dentine in such a position as to leave it supporting the enamel in all directions, starting from the cervico-facial angle, taking the bur rapidly inside the cervical margin to the cervico-lingual angle, coming back, engraving from the cervico-facial towards the incisive edge, this depending upon the length of the cavity; then I proceed from the cervico-lingual angle, drawing the bur in a straight line to meet the other line, thus outlining a triangle. Having graved these lines one can easily then accentuate them with the next size rose-head bur, using it in the same manner, point to point, making the angles more definite, so that at the two cervical angles, labial and facial, one cannot pass round the angle formed, being obliged to change the direction of the bur abruptly, and when the labial and facial angles meet towards the incisive edge, dipping the bur so as to slightly undermine the cavity at that point. If in this movement the damaged tissue is not all removed it should be further excavated by bur or excavator, and the walls, if weakened thereby, should again be chiselled till of requisite strength, and the cavity should be re-shaped. At this stage the walls should be practically parallel but with the angles fairly rounded (fig. 5*b*). Then with a No. ½ rose-head bur the angles should be more definitely accentuated so that there is a more abrupt junction in the two cervical angles (labial and facial), and at the incisive or opposing point, the bur again being very definitely dipped (fig. 5*c*, also fig. 6). A cavity prepared in this way will show five different keys: (1) At the cervical margin; (2) from the cervico-facial angle to the incisive or opposing point; (3) from the cervico-lingual angle to the incisive or opposing point; (4) from the pulpal wall outwards (cross-

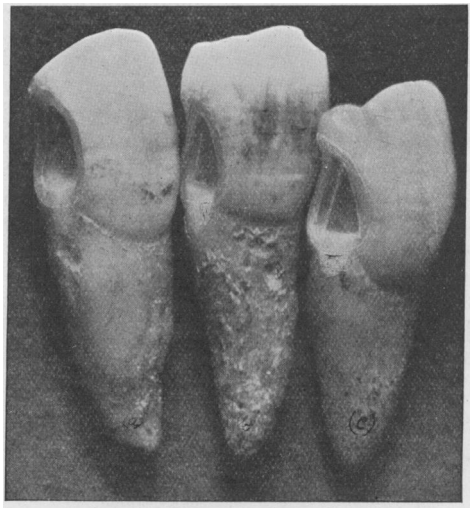

FIG. 5.

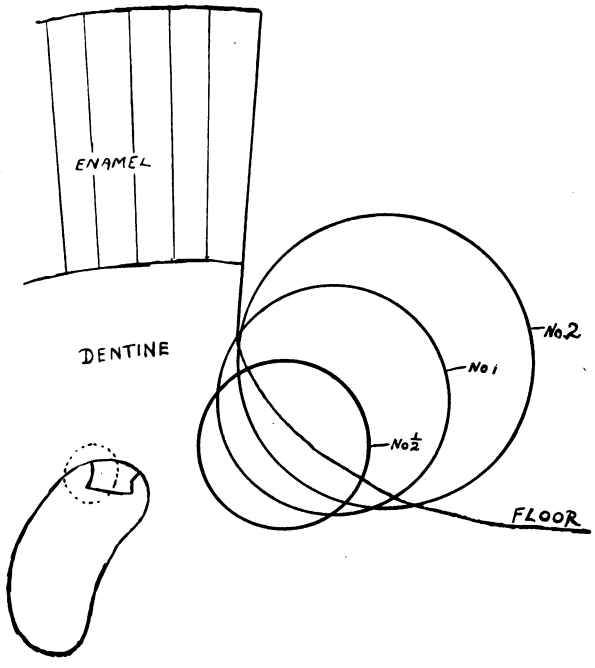

FIG. 6.

section) for the whole length except at the opposing point; (5) from the incisive or opposing point to the cervical floor in longitudinal section through the tooth (fig. 7).

If, for example, one has to sacrifice the centre of either wall, facially or lingually, and it is found that in attempting to form an angle down the whole length of either one runs the risk of exposing the pulp, the centre portion, in such a case is left flattened, the cervical and opposing keys still remain, and the wedging effect will not be complete until the whole filling is inserted. When the incisive edge of an incisor tooth is involved, and it is impossible to make the ordinary opposing point, one forms a Class I cavity along the incisive edge between the plates of enamel, thus combining Classes 3 and 1. The walls are finally finished either with a chisel or with a stone. I prefer the latter as they are now so well made, leave a smoother surface than that made with a chisel, and are economical in use. The walls are so trimmed that their planes, when exposed, follow the whole length of the enamel prisms which, of course, will vary with the contour which has been cut into. The

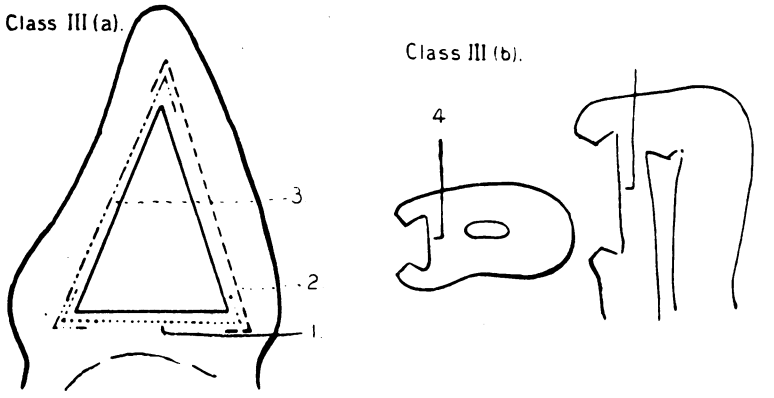

FIG. 7.

line of the prisms may be roughly described as radiating from the pulp as a common centre, or at as near a right angle as possible to the surface of the tooth which is being cut (fig. 8). In order to give some indication of these lines, I have prepared a slide of a plaster tooth which is used as a technique model in Toronto, holes being drilled into it in accordance with lines of prisms from the surface and pins placed in them to show how they either converge or diverge with the particular contour (fig. 9). The object to be attained, in the main, is equal strength or line of junction to the tooth and the filling wherever it may be. Bevelling, however, if gold is to be used, is definitely resorted to if the cavity approaches the incisive or occlusal surfaces, and in all cavities involving the cervical margin. The latter is done especially so as to get a fairly broad foundation on which to support the mass and contour of the filling, and, when almost approaching the termination of the enamel in large cavities, to remove the thin edges of the enamel which may remain interstitially. By bevelling, I mean so cutting the wall that the filling will overlay the enamel on the outer edge, or at the exposed outer end of the prisms. There is no necessity to make starting-holes or pits in the cervical floor or to sink

opposing pits towards the incisive edge. Drilling them is painful or dangerous; if they are large enough for starting gold or to afford a good retention there is a risk of their coming too near the edge or the pulp, and if they are too small there is the

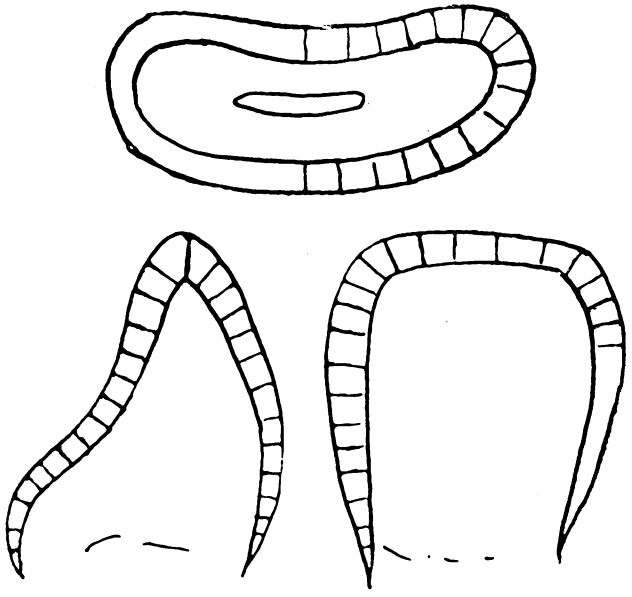

FIG. 8.

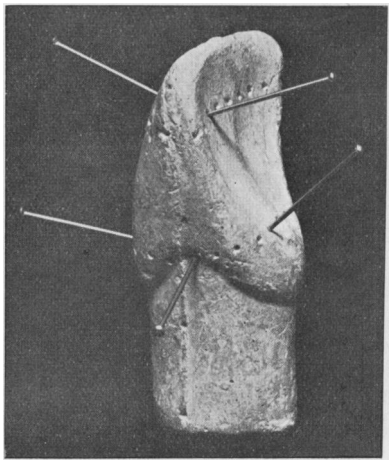

FIG. 9.

risk that the filling material may not enter them. Further, I find no necessity to make grooves, for similar reasons, and because of the added risk of undermining the walls of the cavity, and thereby weakening them and leaving potential lines of

cleavage (fig. 10). The cervical floor should dip slightly on the inner, or pulpal, wall and the facial and lingual walls have the merest extension beyond the parallel, that is, they should be slightly wider inside than out, and the opposing point should only dip into an angle and not into a deep pit. The pulpal wall, so far as possible, should be kept flat, unless, of course, in a fairly large cavity there is a risk of exposing the pulp—then it may be left rounded.

I make little difference in the preparation of a cavity for either a plugged or plastic filling, but in the latter case more licence can be taken. One can risk preparing slightly thinner walls and one can place the material, being plastic, into less accessible portions of the cavity. Cement, being adhesive, adheres to and strengthens the walls.

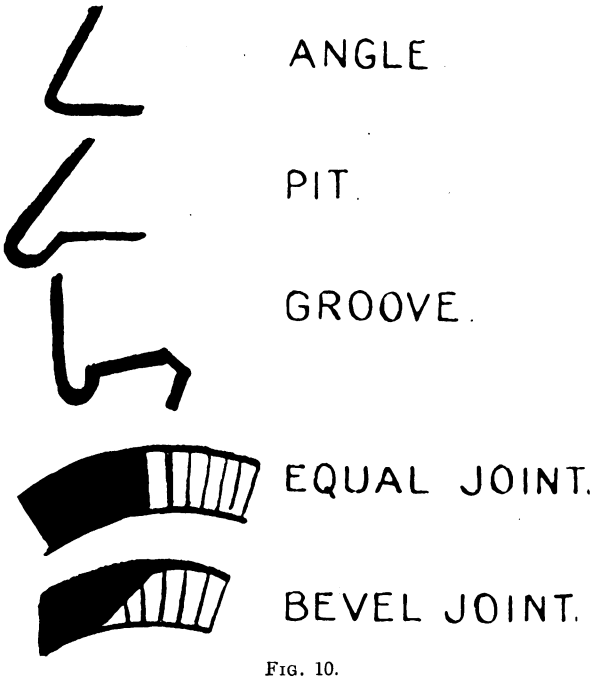

FIG. 10.

Since the use of burs and stones in high-speed electric motors tends to develop heat, I prepare most cavities by the so-called " wet " method, unless there is grave risk of an exposure, and even then I complete that portion of the cavity lying nearest to the gum before isolating the tooth with rubber dam. I also prefer the wet method because during the preparation the débris can be washed out more readily, leaving a perfectly clean cavity.

Desensitizing the tooth or area is now almost routine and has rendered cavity preparation an easy task, but one needs a perfect knowledge of tooth anatomy, since pain, which is a useful symptom, is eliminated, and so the pulp may be unduly endangered and an exposure not discovered until the recovery of sensation.

Inlays.—An inlay is defined as a mass of cast metal, or ground or fused porcelain, prepared in a complete form for insertion into a cavity in a tooth in order to restore its function and contour, and sealed into position by means of a lute, together with, or

without, a retention key or wedge. This method allows of a much larger restoration being undertaken than is usually possible with fillings.

Cavities for inlays.—I classify these as follows :

(1) Box form : in which the walls very slightly diverge from inside outwards—flat floor (M.O.D. cavities are essentially double-box cavities connected occlusally).

(2) Single key or wedge form : to prevent interstitial thrust, the cervical floor is made flat to provide a square seating ; the walls are slightly divergent at the orifice to allow of the withdrawal of the matrix in the long axis of the tooth.

Form 1 is prepared in much the same manner as either Class 1 or Class 2 according to position (*vide supra*) except that the orifice is slightly larger than the interior.

Form 2 is applicable to : (*a*) mesio- or disto-occlusal cavities in either premolars or molars. The key or wedge is formed in the occlusal surface and extends to a flat cervical floor. It is prepared in a manner similar to Class 2, except that the orifice

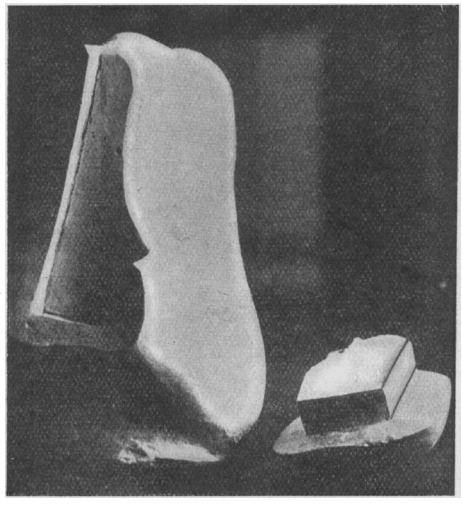

FIG. 11.

in the occlusal surface should be slightly larger than the deeper portion of the cervical floor of the cavity ; (*b*) incisors and canines. The retaining key for (*b*) is made in the lingual wall of the cavity by cutting through it with a No. 2 square-ended fissure-bur run parallel with the facial wall and extending down to the cervical floor, then carried backwards across to that portion of the lingual wall towards the cingulum. This is followed by a No. 1 fissure-bur used in a similar manner to accentuate the angles, followed further by a No. ½ fissure or No. ½ rose-head to define the angle in the long axis of the tooth, leaving the orifice slightly larger than the deeper portion. The facial and lingual walls are cut away so as to allow the impression or matrix to be withdrawn in the long axis of the tooth and to separate immediately from the walls (fig. 11). The incisive edge and lingual walls are bevelled for metal inlays and left square in the case of porcelain. Inlays in Form 2 cavities are sealed in by a lute which retains them in position in the long axis of the tooth, the lingual key preventing their displacement interstitially.

In all cases should the floor of a cavity become uneven in following isolated areas or more deeply penetrating caries, it is permissible and advantageous to flatten this with cement in order to prevent undue loss of sound tissue and, if approaching the pulp to insulate it, provided that, in so cutting the dentine support, the sound enamel is not removed. In the latter event the tissue must be cut back until the enamel is supported by sound dentine.

One's appreciation of retention is much increased by noting the inner portion of a filling or cast of a cavity.

A useful accomplishment to encourage is ambidexterity so that one can still stand at the right side of the chair, changing the handpiece from the right to the left hand, thus making the preparation of distal cavities more simple.